

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. ~~(Cancelled) A Hafnium-based high-density metallic glass alloy having the ratio of elements of the formula  $\text{Hf}_a\text{Cu}_b\text{Ni}_c\text{Al}_d\text{Y}_e$  wherein;  
Y comprises one element from Group IVA, IVB, VA, or VB;  
a is less than 45 atomic percent;  
b is from about 15 to about 35 atomic percent;  
c is from about 5 to about 25 atomic percent;  
d is from about 0 to about 20 atomic percent; and  
e is from about 0 to about 15 atomic percent, wherein  $a+b+c+d+e=100$ ; said alloy having a density of at least  $7\text{ g/cm}^3$ .~~
2. ~~(Cancelled) The metallic glass alloy of claim 1, wherein a is 44.5 atomic percent or less.~~
3. ~~(Cancelled) The metallic glass alloy of claim 2, wherein Y is Ti or Nb.~~
4. ~~(Cancelled) The metallic glass alloy of claim 1, further comprising a density greater than about  $7\text{ g/cm}^3$ .~~
5. (Currently amended) [The metallic glass alloy of claim 3,] A Hafnium-based high-density metallic glass alloy having the ratio of elements of the formula  $\text{Hf}_a\text{Cu}_b\text{Ni}_c\text{Al}_d\text{Y}_e$  wherein;  
Y is Ti or Nb;  
a is less than 45 atomic percent;  
b is from about 15 to about 35 atomic percent;  
c is from about 5 to about 25 atomic percent;

d is from about 0 to about 20 atomic percent; and  
e is from about 0 to about 15 atomic percent, wherein  $a+b+c+d+e=100$ ; said alloy having  
a density of [wherein the density is] about 10.5 g/cm<sup>3</sup>.

6. (Currently amended) The metallic glass alloy of claim 5 [4], wherein the alloy exhibits a distinct glass transition temperature, that is at least 0.59 of the liquidus temperature of the alloy.
7. (Currently amended) The metallic glass alloy of claim 5 [4], wherein the ratio of Cu to Ni is 2:1.
8. (Cancelled) ~~The metallic glass alloy of claim 3, wherein the ratio of Cu to Ni is 2:1.~~
9. (Currently amended) The metallic glass alloy of claim 5 [3], having about 5 or more atomic percent Ti.
10. (Currently amended) The metallic glass alloy of claim 5 [3], having about 5 or more atomic percent Nb.
11. (Cancelled) ~~The metallic glass alloy of claim 1, wherein d is about 10 or more.~~
12. (Cancelled) ~~The metallic glass alloy of claim 1, wherein  $35 < a < 45$ ,  $0.1 < d < 20$ , and  $0.1 < e < 15$ .~~
13. (Cancelled) ~~An article comprising the metallic glass alloy of claim 1.~~
14. (Cancelled) ~~The article of claim 13 having a thickness of at least 1 millimeter in its smallest dimension.~~

15. (Cancelled) ~~The article of claim 13 having a thickness at least 3 millimeters in its smallest dimension.~~

16. (Currently amended) A Hafnium-based high-density metallic glass alloy composition comprising:

44.5 atomic percent hafnium;

about 27 atomic percent copper;

about 13.5 atomic percent nickel;

about 10 atomic percent aluminum; and

about 5 atomic percent titanium or niobium; and a density greater than 7 g/cm<sup>3</sup>.

17. (Cancelled) [~~The composition of claim 16 having a density greater than 7 g/cm<sup>3</sup>. ]~~

18. (Previously presented) The composition of claim 16, having a density of about 10.5 g/cm<sup>3</sup> or more.

19. (Previously presented) The composition of claim 16, wherein the composition exhibits a distinct glass transition temperature of at least 0.59 of the liquidus temperature of the composition.

20. (Previously presented) An article comprising the metallic glass alloy of claim 16.

21. (Previously presented) The article of claim 20 having a thickness of at least 1 millimeter in its smallest dimension.

22. (Previously presented) The article of claim 20 having a thickness of at least 3 millimeters in its smallest dimension.

23. (Previously presented) The article of claim 20, wherein the ratio of copper to nickel is 2:1.

24. (Previously presented) The article of claim 20, wherein the alloy is at least partially amorphous.
25. (Previously presented) The article of claim 20, wherein the article has an elastic strain to failure between about 1.8 and 2.2 percent elongation.
26. (Previously presented) The article of claim 20, wherein the object has a quasi-static compressive yield stress of between about 1.8 and 2.2 GPa.
27. (Previously presented) The article of claim 20, wherein the object has a dynamic high-strain-rate yield stress of between about 1.3 and 1.6 GPa.
28. (Previously presented) A metallic glass alloy comprising Hf, Cu, and Ni in eutectic combination with Al, Ti, Nb or a combination thereof, having a density equal to or greater than about 10.5 g/cm<sup>3</sup>.
29. (Previously presented) A method for forming a Hafnium-based high-density metallic glass alloy comprising:  
combining 44.5 atomic percent hafnium;  
about 27 atomic percent copper;  
about 13.5 atomic percent nickel;  
about 10 atomic percent aluminum; and  
about 5 atomic percent titanium or niobium and heating said ingredients in an inert atmosphere to form an alloy.
30. (Currently amended) The method [~~alloy~~] of claim 29, wherein the alloy is formed by heating with electric arc melting.
31. (Currently amended) The method [~~alloy~~] of claim 29, wherein the alloy is formed by induction melting.

32. (Previously presented) The article of claim 16, wherein the article is formed by vacuum suction casting.

33. (Previously presented) The article of claim 16, wherein the article is formed by permanent mold casting, injection die casting, pour casting, planar flow casting, melt spinning, or extrusion.

34. (Cancelled) A method for making a Hafnium-based high density alloy generally represented by the formula  $Hf_aCu_bNi_cAl_dY_e$ , wherein Y includes at least one element selected from Group IV or Group V transition metal elements, wherein Hf is not equal to Y, Group VA, VIII, IVB, or VB, wherein  $a+b+c+d+e=100\%$  (atomic percent), and a is less than 45 in an invariant combination by heating said ingredient in an inert atmosphere to form the alloy.

35. (Cancelled) An alloy according to Claim 34 invariantly combining Hf, Cu, and Ni with Al, and Ti or Nb to form a metallic glass alloy having a density greater than about 7 g/cm<sup>3</sup>.

36. (Cancelled) The alloy of Claim 35 wherein the alloy contains Al.

37. (Cancelled) The alloy of Claim 36 wherein the alloy contains Ti or Nb.

38. (Cancelled) The alloy of Claim 35 wherein the alloy contains an element from Group IVA or Group IVB.

39. (Cancelled) The alloy of Claim 36 wherein the alloy contains an element from Group IVA or Group IVB.

40. (Cancelled) The alloy of Claim 34 wherein  $35 < a < 45$ ,  $15 < b < 35$ ,  $5 < c < 25$ ,  $0 < d < 20$ , and  $0 < e < 15$ .